

JOINT REGIONAL AGREEMENT ON WATER QUALITY TRADING

Discussion Guide, August 7th, 2013

This Discussion Guide is intended to provide definitions, context, analysis, and options for addressing various components of water quality trading programs. It poses questions that will be discussed at the interagency workshops. This document may reference other trading programs, examples, or documents, but is not intended to serve as a published report or white paper and thus will not be extensively cited. This document will be included in the workshop packet and posted online following each workshop.

11. Adaptive Management & Effectiveness Monitoring

Current challenges in water quality make critical the exploration of innovative approaches in fairly rapid timeframe. In these cases, it is important to move forward with the best information currently available and make a commitment to test assumptions through the collection and incorporation of new data as it comes to light. This process is broadly referred to as adaptive management. More specifically, adaptive management is a “systematic approach for improving natural resource management, with an emphasis on learning about management outcomes and incorporating what is learned into ongoing management. Adaptive management can be viewed as a special case of structured decision making, which deals with an important subset of decision problems for which recurrent decisions are needed and uncertainty about management impacts is high.”¹

In the case of trading, an adaptive management framework would focus on: 1) improving trading program standards, protocols, and process; 2) generating and incorporating new information on quantification methods used to estimate water quality benefits of BMPs²; and 3) evaluating whether the trading program is effective at meeting overall water quality goals. Note: as explored in the Discussion Guide for “5. Permitting, Compliance, and Enforcement,” effectiveness monitoring is not being considered as a way to document permittee compliance.

Adaptive management includes iterative phases with four distinct points³:

- **Decision making:** at each decision point, an action is chosen (e.g., use of a particular method for quantifying credits, or acceptance of a given BMP) based on the current understanding of the system (e.g. estimates of method accuracy or BMP effectiveness). The selection of Draft Best Practices to bring into the pilot phase is a key decision point in the JRA process.
- **Follow-up monitoring:** monitoring is used to track the changes over time, such as changes to water quality or a BMP performing as expected. This is an on-going activity, and is especially important for producing data to evaluate management interventions and updating the measures of confidence around models that are used to calculate expected uplift. A very important element of monitoring is to establish the baseline conditions for the system and project site of interest from which uplift can be estimated and measured.

¹ http://www.usgs.gov/sdc/adaptive_mgmt.html

² The incorporation of *new* BMPs and quantification methods is another component of program adaptation, but is considered separately in the Draft Best Practice for BMP Review and Acceptance.

³ Williams, B.K., and E.D. Brown, 2012, Adaptive management: the U.S. Department of the Interior applications guide, Washington, DC: U.S. Department of the Interior, 136 p.

- **Assessment:** monitoring data, information, and knowledge dovetails with performance evaluation to inform future decision making. This could be comparing prior model predictions or forecasts of the future with the currently observed changes to the natural resource and credit-generating project.
- **Learning and feedback:** As understanding evolves, so does decision making. For example, if monitoring reveals that numerous riparian restoration projects have been lost due to various factors (i.e., flood stage, poor site conditions, herbivore), then new decisions need to ensure the performance of temperature credits over time (e.g. improved replanting methods in the flooding extent, site selection criteria, and protection of plantings with fencing, respectively). Similarly, confidence would increase in models that predict ecosystem changes accurately, or decrease in those models that do not.

As trading programs follow this general framework for adaptive management, program administrators⁴ will need to determine what information should be tracked, who is responsible for tracking and analyzing that information, and how to incorporate it into ongoing program operations.

11.1 Adaptive management of standards, protocols, and process

What data should be collected and how should it be incorporated?

The “data” on performance of program operations does not require study design, monitoring, or statistical analyses. Improving program operations comes from tracking comments, questions, and user experience. The benefit of tracking this information is a system that works more smoothly for the program administrator and participant (project developer) — more effectively meeting program objectives at a lower cost.

I. Options/Considerations: Program components that may be tracked include:

- Clarity of guidance and protocols: can project developers, verifiers, and other market participants clearly understand the operating procedures and standards that must be met?
- Ease of use of forms and systems for submitting documentation: where is the paper piling up?
- Cost to deliver services: internal costs for program administrators should be tracked to adjust fees collected from project developers, or otherwise ensure that their role is sustainable.
- BMP quality and performance standards: are we using the right metrics? At the right levels? Are BMPs performing as expected?

II. Recommended default: Program administrators should track performance of protocols and program operations and consider updating program documents (e.g., protocols, guidance, etc.) on a biennial basis, or as needed.

II. Reasons to deviate from the default: Updates to rule may occur on a less frequent schedule.

11.2 Adaptive management for quantification methods

Models, effectiveness rates, and direct measurement methods to calculate credits are all based on our best-available, yet imperfect, understanding of natural system dynamics. Water quality trading projects provide an opportunity to generate the data that will improve quantification methods over time, but a trading program should consider who will be responsible for setting up and conducting monitoring and how improvements should be incorporated.

11.2a What data should be collected and who should be responsible?

⁴ A discussion of which entity performs program administration functions (e.g., state, permittee, or third party) is included in the Discussion Guide for the “Roles of States and Third Parties” and will not be dealt with in detail here.

Information needs will vary depending on the method being used. In order to improve quantification methods, it may be necessary to develop a robust sampling design and install sampling equipment at a number of sites. Considering the investment of time and technology, the improvement of these methods is not likely to happen on its own. Some entity needs to take ownership over the management and improvement of the quantification method.

I. Options/Considerations: Where the quantification method was developed by the agency (e.g., HeatSource or other models used for TMDL development), agency staff are likely to be best suited to manage improvements and release new versions. Managing improvements would be much more difficult and time intensive where agency staff are *not* highly familiar with the quantification method (such as those proposed by third parties⁵).

In either case, some agency resources will be required. Where agencies manage improvements, they will need to take on study design, monitoring, and quality control associated with improving quantification methods. Updates to quantification methods conducted by third parties will likely require agency review. It's unclear whether these tasks can be accomplished within existing program budgets, whether additional funding would be needed, and whether it would be worth going through the process to set and collect a fee for these services.

II. Recommended default: Agencies manage monitoring and release of new versions for those quantification methods that they have created (e.g., models developed for a particular watershed or for TMDLs in general like HeatSource). Where there is a third party proponent for the method, that entity is responsible for effectiveness monitoring and improvements. An adaptive management plan, including a monitoring plan and protocols for version control, must be submitted before the method is accepted for use in the trading program. Reports of changes/improvements to the quantification must be submitted to the state agency. Agencies may choose to discontinue acceptance of a method where effectiveness monitoring plan was not followed, technical analyses are not considered sufficient, or better methods have become available. Where review by agency staff is required, fees may be considered to recover agency costs.

III. Reasons to deviate from the default: Where application of a given quantification method is limited in scope or time, agencies may determine that it is not necessary to invest in monitoring and adaptive management.

11.2b How should improvements be incorporated?

I. Options/Considerations: Mechanisms for incorporating new versions of models and other quantification methods into trading programs as they become available should use the most up-to-date science as soon as possible, be consistent with the permitting process, and provide certainty for permittees and other market participants. The method for quantifying credits is likely to be incorporated into the permit (see Discussion Guide on "5. Permitting, Compliance and Enforcement" for more detail), and therefore remain set for the duration of the permit cycle. New versions may be incorporated in subsequent permit cycles.

II. Recommended default: Upon acceptance of a new version of a quantification method, all subsequent trading programs should use the new method. All projects related to a previously established trading program will continue to use the model version that was in effect at the time the program began, unless the permittee and state agency choose to amend the permit accordingly.

⁵ The draft best practice for BMP Review and Acceptance describes a system in which method or practice-proponents submit technical analyses to the agency for review.

III. Reasons to deviate from the default: In the event that new data were to reveal severe flaws in a credit quantification methodology, what options are available to minimize any adverse impacts to water quality?

11. 3 Effectiveness monitoring for program success

Ultimately, we want to be able to answer the question, “Is it working?” Is trading fulfilling the obligations of point sources and is the water getting cleaner?

Detecting changes in ambient water quality that is attributable to trading is likely to require a *trading program effectiveness monitoring* effort in which basin-wide water quality monitoring is initiated as the program begins (to set a baseline) and then continues through full implementation of the trading program. Where nonpoint reductions are distributed throughout a watershed, and where investments from trading are small compared to the overall excess load problem in a watershed, it may be worth considering whether detecting a change in water quality attributable to trading is even possible. Trading program effectiveness monitoring also has the potential to overlap with the TMDL effectiveness monitoring that states may already conducting, as both are likely to require a watershed-scale effort to track trends and causal factors.

Questions to consider are whether trading program effectiveness monitoring should be implemented, and if so, who is responsible?

I. Options/Considerations: If state agencies were to manage TMDL effectiveness monitoring and trading program effectiveness monitoring, there would be an opportunity to efficiently coordinate the two and minimizing the overall cost of determining program. Where states are not already undertaking TMDL effectiveness monitoring however, it may be a stretch to add the additional study design, data collection, and analysis necessary to evaluate the impact of trading.

If the permittee were required in their permit to implement an effectiveness monitoring plan for their trading program, agencies would be relieved from the responsibility and associated costs. However, this may be seen as going beyond the permittee’s responsibility, which typically extends to meeting permit obligations and does not include tracking progress on the watershed scale. In addition, where TMDL effectiveness monitoring is not already occurring, this could be a large obligation and may prove a barrier to entry for facilities.

II. Recommended default: We aren’t sure where to go on this one. What makes the most sense?

III. Reasons to deviate from the default: